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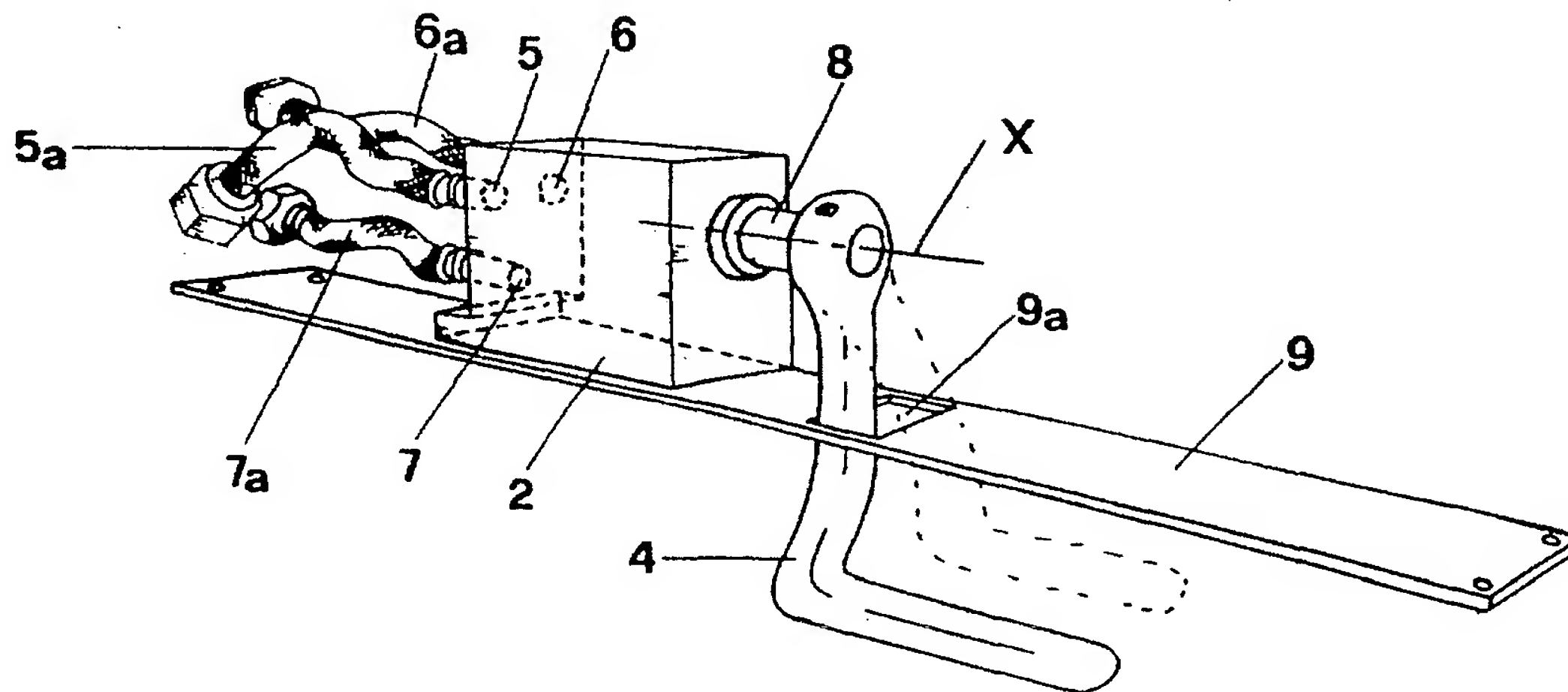
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(54) Title: MIXED WATER DELIVERY UNIT



(57) Abstract: A mixed water delivery unit (1) comprising a hot and cold water mixer (2), a spout (3) for the distribution of mixed water, and a handle (4) for operating said mixer (2), to be grasped by the user's hand and connected to a pin (8) which protrudes from said mixer (2). The mixer (2) is applied to a bearing flange (9) equipped with a slit (9a) from which the handle (4) protrudes. The bearing flange (9) is arranged for closing a recess (10), made out of a bearing structure (11), which houses the built in mixer and the fitting pipes (5a, 6a, 7a).

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### MIXED WATER DELIVERY UNIT

The invention is about a mixed water delivery unit especially fit to be employed in sanitary water delivery apparatuses.

It is well known that mixed water delivery units basically consist of a mixer  
5 equipped with hot and cold water inlet ways coming from the distribution network, with at least one mixed water outlet way connected to a spout and with a projecting pin, associated to internal mixing devices, connected to an operative handle available to the user.

In order to assemble the delivery unit, first the mixer's ways are connected to  
10 the terminals of the distribution network and of the delivery device which are built in the wall and thus, once the connection has been carried out, everything is sealed with mortar and the plastering or some other coating is applied.

Once the assembly is completed, the mixer's part that houses the mixing  
members together with the corresponding pin to which the handle is applied  
15 protrudes from the wall.

Those previously described delivery devices available on the market, have the problem that in the case of a needed substitution of the whole delivery unit or even just the mixer, it is necessary to demolish the wall at the embedding point. In addition, after the substitution, the hole made in the wall must be  
20 sealed with mortar and the plastering or coating must be applied all over again. It is obvious that such operation forces the user to meet the frequently excessive expenses, taking into consideration the high labor costs charged by the field's technicians.

Furthermore the user must also cope with the hassles caused by the execution  
25 of wall demolition operations inside an apartment.

The present invention's object is that of remedying to said inconveniences.

More specifically, a first object of the invention is to provide a delivery unit that can be removed and replaced without having to touch the wall structures.

A further object of the invention consists in making the delivery unit assembly  
30 easier and faster than matching state of the art delivery units.

The abovementioned objects are accomplished by a mixed water delivery unit which, according to the main claim, comprises the following:

- a mixer having a first hot water inlet way, a second cold water inlet way and a third mixed water outlet way;
- 35 - a spout for the distribution of said mixed water;

- a first fitting pipe which connects said first inlet way with a hot water feeding pipe;
  - a second fitting pipe which connects said second inlet way with a cold water feeding pipe;
  - 5 - a third fitting pipe which connects said third outlet way with a pipe connected to said delivery device;
  - a handle for operating said mixer, that can be grasped by the user's hand and connected to a pin which protrudes from said mixer and which is mechanically connected to the mixing members found inside said mixer, and that is also characterized by comprising a bearing flange to which said mixer is associated and wherein a slit from which said handle protrudes is made, where said bearing flange has being arranged for closing a recess made out of a bearing structure and fit to house said built in mixer and said fitting pipes.
- 10
- 15 According to a preferred embodiment described hereafter, the connection of the mixer to the feeding pipes of the distribution network and to the spout occurs through fitting hoses.
- The spout for the mixed water supply can also be connected to the flange which supports the mixer.
- 20 The bearing flange is removably applied for closing the recess made out of a bearing structure directly through fastening screws arranged as passing through the flange which is coupled to matching nut screws found in said recess.
- According to a further embodiment, the flange is removably applied through
- 25 screws to the opening of a box that houses the mixer and the pipes and which is also inserted into the recess made out of the bearing structure.
- Advantageously, in order to disassemble the delivery unit, it is no longer necessary to carry out wall demolitions, because it is enough to remove the bearing flange from the respective recess made out of the bearing structure or
- 30 from the box's opening and thus disconnecting the hoses which connect the mixer's ways to the hydraulic network and to the spout.
- Once the replacement has been carried out, it is enough to apply again the flange for closing either the recess or the box.
- Said advantages and objects are achieved thanks to a mixed water delivery
- 35 unit which is described with reference to the annexed drawing sheets, wherein:

- Figure 1 is an isometric view of the application of the invention's delivery unit;
- Figure 2 is an isometric view of part of the delivery unit of figure 1;
- Figure 3 is a side view of the part of the delivery unit of figure 2;
- 5 - Figure 4 is a top view of the part of the delivery unit of figure 2;
- Figure 5 is an enlarged isometric view of the part of the delivery unit of figure 2 during the assembly;
- Figure 6 is an enlarged isometric view of the part of the delivery unit of figure 2 in an operative embodiment during the assembly;
- 10 - Figure 7 is an enlarged isometric view of a further operative embodiment of the invention's delivery unit during the assembly; and
- Figure 8 shows another installation variation of an embodiment of the invention's delivery unit.

The invention's delivery unit is represented by one of its applied variations as shown in Figure 1 where it is generally indicated with the number 1.

It must be noticed that the delivery unit essentially comprises a hot and cold water mixer 2, a mixed water spout 3 hydraulically connected to the mixer 2, and an operative handle 4 for controlling the delivery.

It is obvious that the spout 3, in this case represented by a shower head, can be of any type, size or shape.

More particularly, it can be seen in figures 2 to 4 that in the mixer 2 there are: a first hot water inlet way 5, a second cold water inlet way 6, a third mixed water outlet way 7 and a pin 8 which protrudes from the body of the mixer 2.

The pin 8 is mechanically connected to the mixing members found inside of the mixer, and a handle 4 is connected to such pin.

It must be specified that the mixer 2 is itself a state of the art component available on the market which, however made of different shapes and sizes, is used by all delivery units of the known kind.

In the specific described case, the mixer has a pin 8 which is made rotate around the longitudinal axis X through the handle 4.

With reference to the abovementioned figures, it is described that the first inlet way 5 and the second inlet way 6 are connected through a first fitting pipe 5a and a second fitting pipe 6a respectively to a hot water feeding pipe 5b and to a cold water feeding pipe 6b which belong to the distribution network of the hydraulic plant.



In a similar way, the third mixed water outlet way 7 is connected through a fitting pipe 7a to a pipe 7b connected to the spout 3.

According to the invention and referring to figure 5, the delivery unit 1 comprises a bearing flange 9 to which said mixer 2 is associated and wherein  
5 a slit 9a from which said handle 4 protrudes is made, where said bearing flange 9 has being arranged for closing a recess 10 made out of a bearing structure 11, said recess being suitable for housing said built in mixer 2 and said fitting pipes 5a, 6a, 7a.

The bearing flange 9 is applied for closing the recess 10 through removable  
10 connecting means which comprise screws 12, each one of them is arranged as a passing through hole 9b made in the bearing flange 9 and it is housed into a nut screw 10a found in the recess 10.

It must be specified that such nut screws 10a can be installed inside the recess 10 during its operation.

15 According to an operative embodiment that is described in figure 6, the delivery unit 1 comprises also a box 13, slidably insertable into the recess 10, wherein the mixer 2, and the fitting pipes 5a, 6a, 7a, are housed when the bearing flange 9 is arranged for closing the box.

In this case, the connection of the bearing flange 9 to the box 13 takes place  
20 through screws 12 where each one of them is housed into a nut screw 14 which belongs to the box 13.

A further operative embodiment is illustrated in figure 7 and differs from the previously described embodiments because the bearing flange 9 supports also the spout 3 which gets fixed to it.

25 It is clear that such operative embodiment with the spout 3 applied to the flange 9 can provide that the latter were arranged either for closing the box 13 as described in figure 7, or for directly closing the recess 10.

In the case wherein the spout 3 belongs to the bearing flange 9, an assembly embodiment could be, as an example, that shown in figure 8.

30 Based on what has been previously described it seems clear that the invention's delivery unit, in all the presented embodiments, accomplishes the pre-established objects.

As a matter of fact, after having made the recess 10 into the bearing structure 11, it is enough to link the pipes which connect the mixer 2 to the distribution  
35 network and to the spout 3 and thus applying the bearing flange 9 directly to

the recess 10 or to a box 13, in this case before the insertion of the latter into the recess 10.

Therefore the assembly becomes easy, fast, and certainly less expensive compared to the traditional spouts because operations which involve concrete masonry are not required.

The disassembly as well is very simple because it is enough to remove the flange from either the recess or the corresponding box in order to easily carry out the replacement of the hoses or of the mixing unit or even of the operative handle or also of the entire unit.

Obviously, as previously said, the spout 3 can be of any kind or shape.

In the operative phase, embodiments fit to make both the assembly and the building easier can be applied to the invention's delivery unit.

When said executive variations that have not been described or illustrated in the annexed drawings fall within the scope of protection of the following claims, they should be considered as integral part of the invention and therefore should be also covered by the present patent.

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## CLAIMS

1) A mixed water delivery unit (1) comprising:

- a mixer (2) having a first hot water inlet way (5), a second cold water inlet way (6), a third mixed water outlet way (7);
- 5 - a spout (3) for the distribution of said mixed water;
- a first fitting pipe (5a) which connects said first way (5) to a hot water feeding pipe (5b);
- a second fitting pipe (6a) which connects said second way (6) to a cold water feeding pipe (6b);
- 10 - a third fitting pipe (7a) which connects said third way (7) a to a pipe (7b) connected to said spout (3);
- a handle (4) for operating said mixer (2), that can be grasped by the user's hand and connected to a pin (8) which protrudes from said mixer (2) and which is mechanically connected to the mixing members found inside said
- 15 mixer (2), **characterized by** comprising a bearing flange (9) to which said mixer (2) is associated and wherein a slit (9a) from which said handle (4) protrudes is made, where said bearing flange (9) has being arranged for closing a recess (10) made out of a bearing structure (11) and fit to house said built in mixer and said fitting pipes (5a, 6a, 7a).

20 2) The delivery unit (1) according to claim 2), **characterized by** comprising a box (13) which is inserted into said recess (10) and wherein said mixer (2), and said fitting pipes (5a, 6a, 7a) are inserted as well when said bearing flange (9) is arranged for closing said box (13).

25 3) The delivery unit (1) according to claims 1) or 2), **characterized in that** said fitting pipes (5a, 6a, 7a) are hoses.

4) The delivery unit (1) according to claim 1), **characterized in that** said bearing flange (9) is applied for closing said recess (10) through removable connecting means that comprise screws (12) arranged as passing through holes (9b) made in said flange (9) which are coupled into matching nut

30 screws (10a) associated to said recess (10).

5) The delivery unit (1) according to claim 2), **characterized in that** said bearing flange (9) is applied for closing said box (13) through removable connecting means that comprise screws (12) arranged as passing through holes (9b) made in said flange (9) which are coupled into matching nut screws

35 (14) associated to said box (13).

6) The delivery unit (1) according to claims 1) or 2), characterized in that said bearing flange (9) is also connected to said spout (3).

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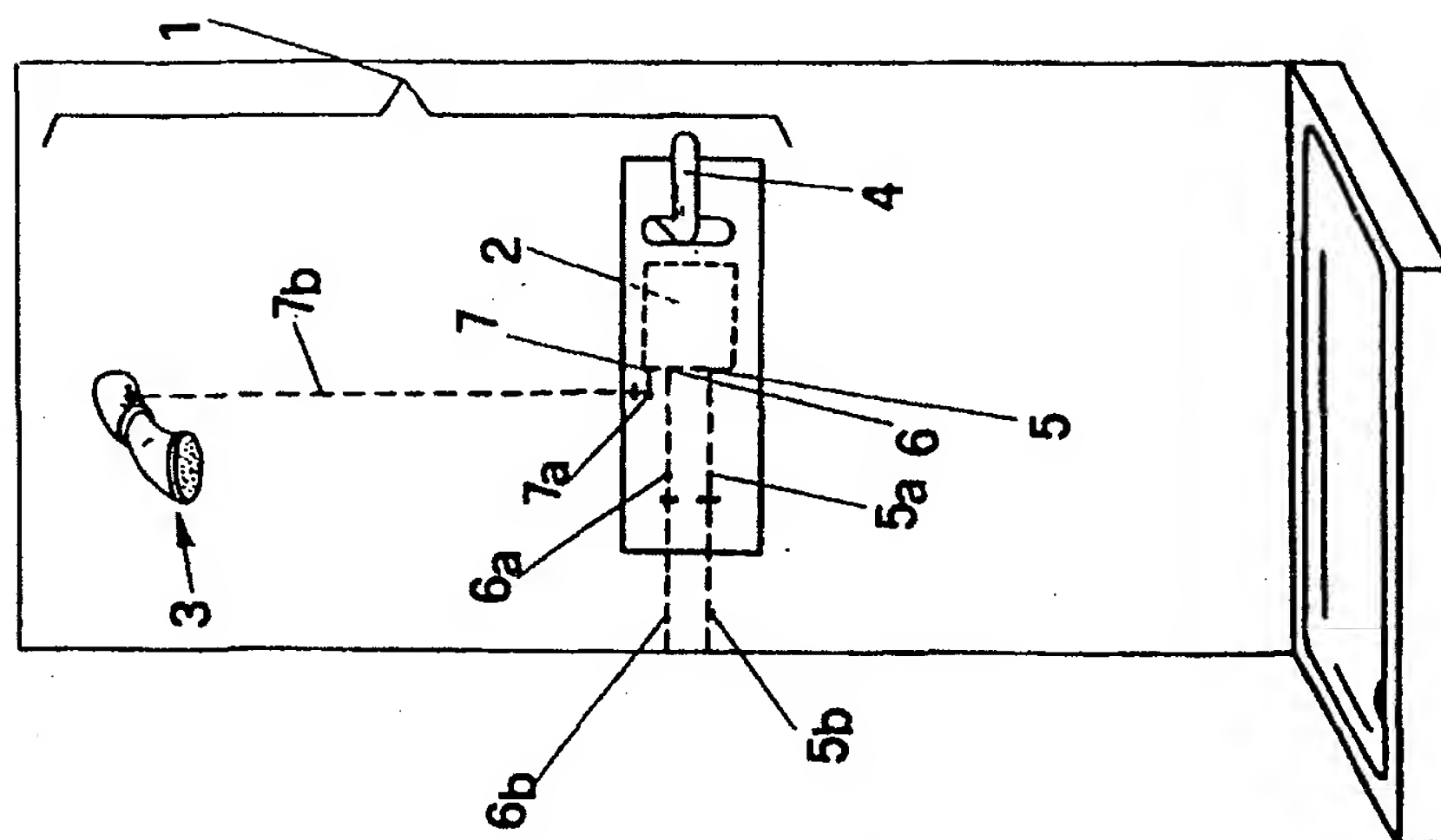
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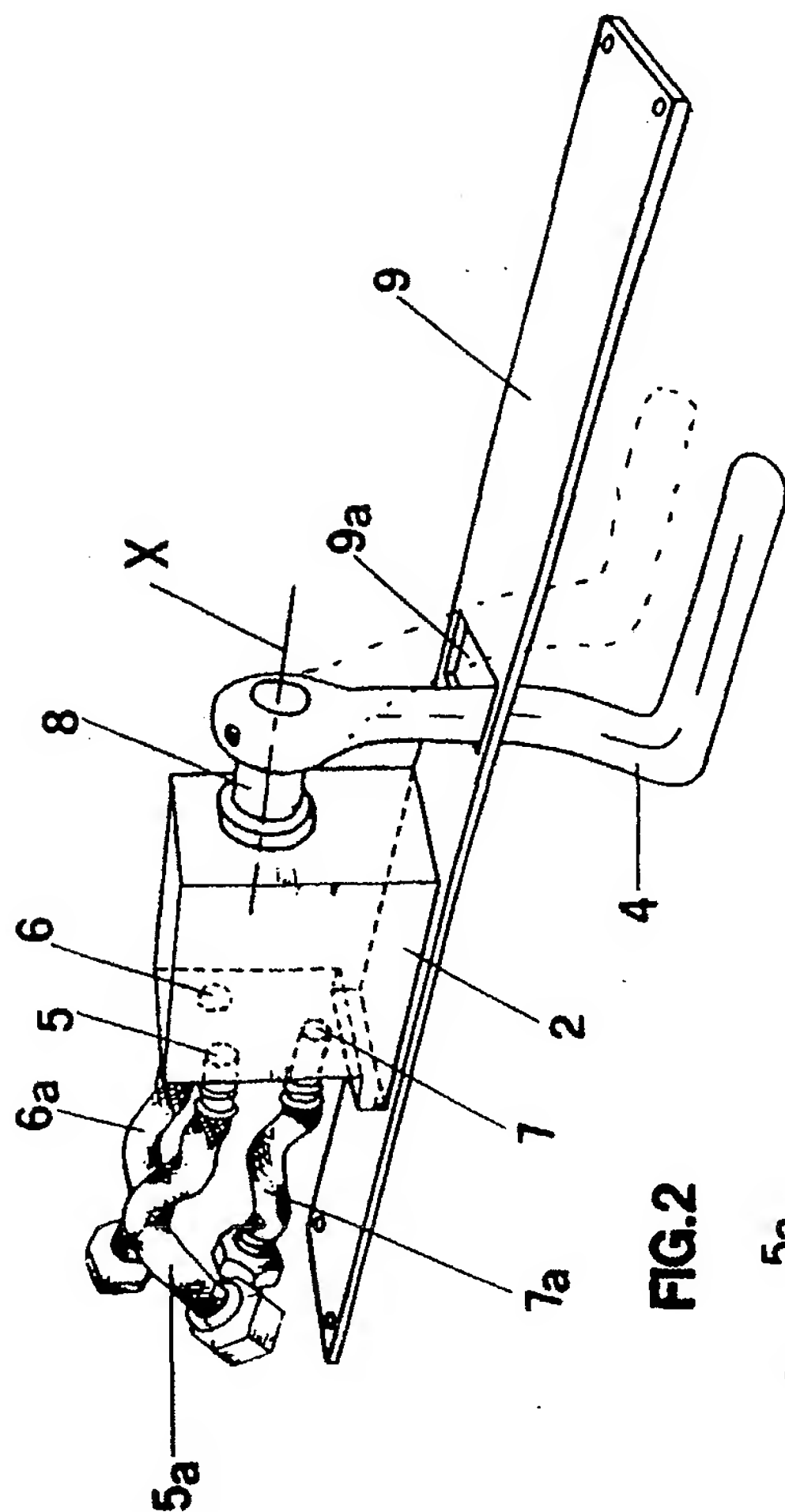
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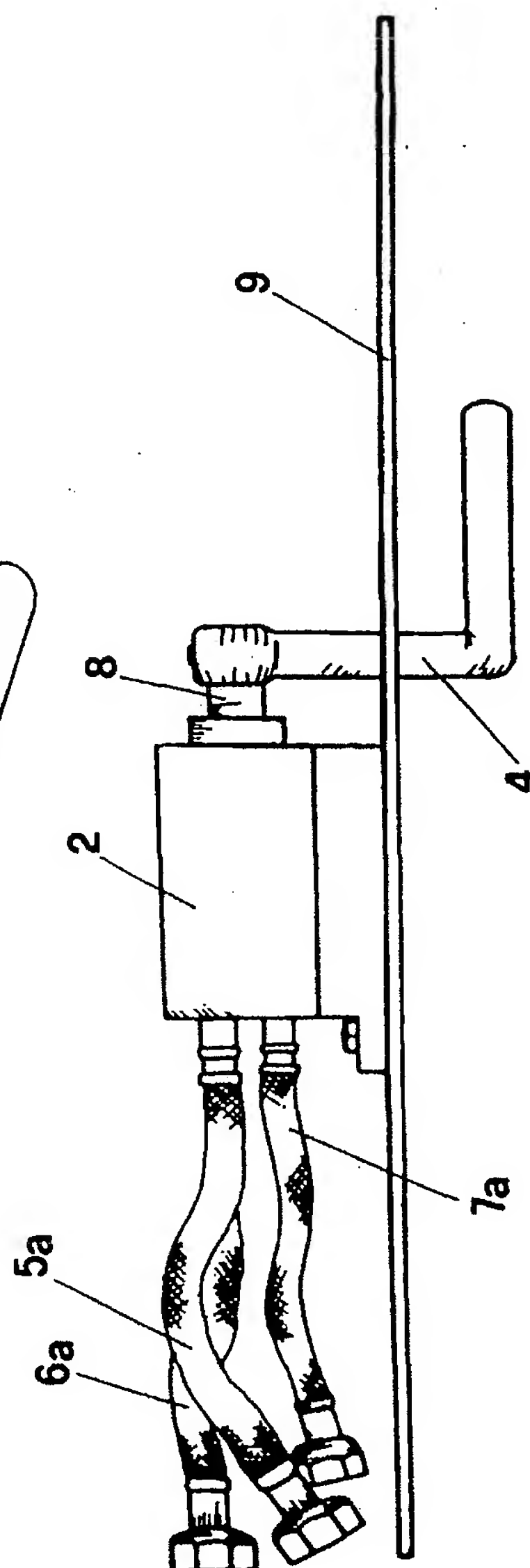
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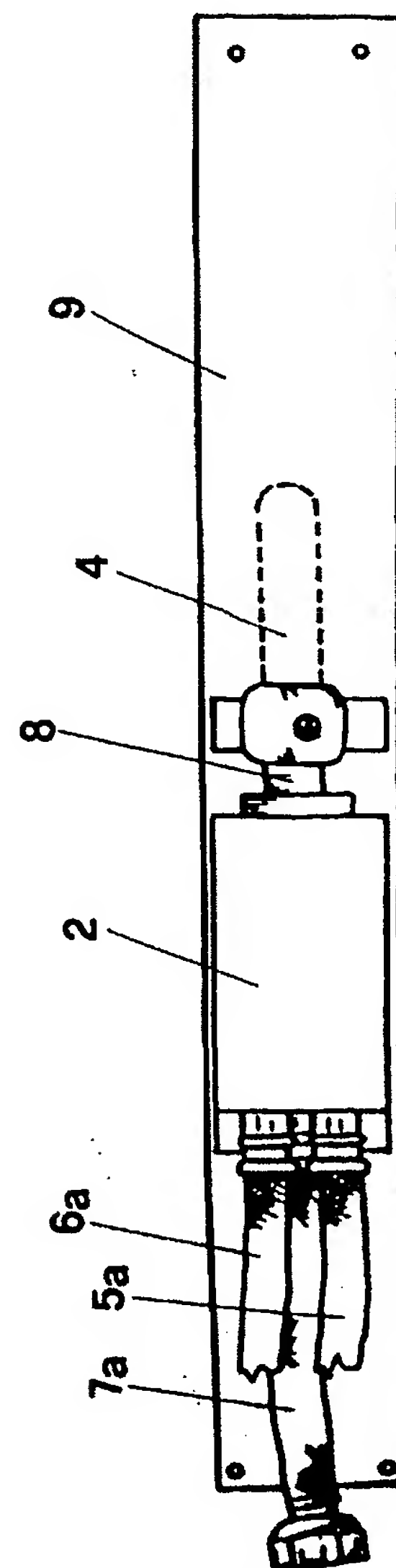
**FIG. 1**



**FIG. 2**

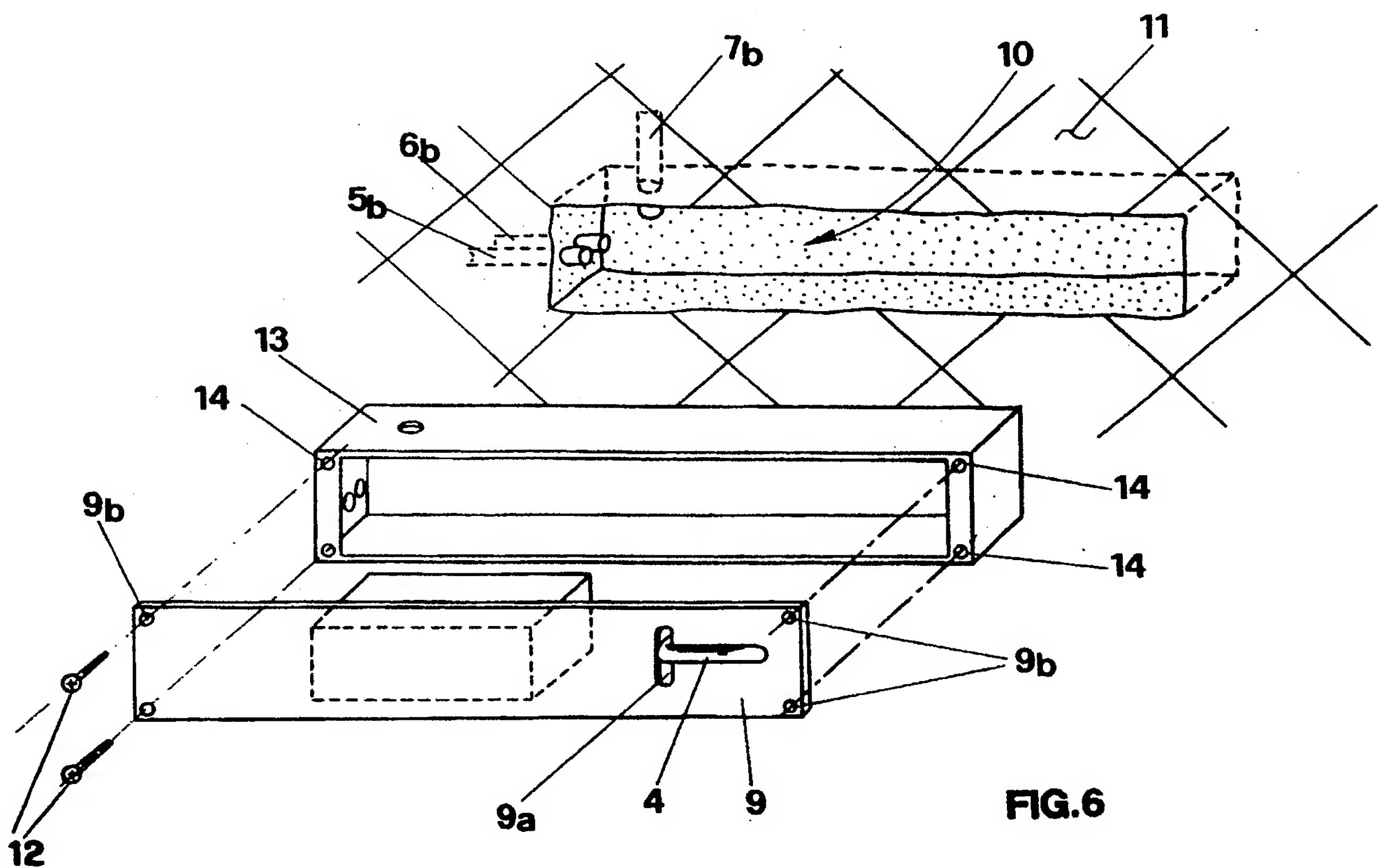
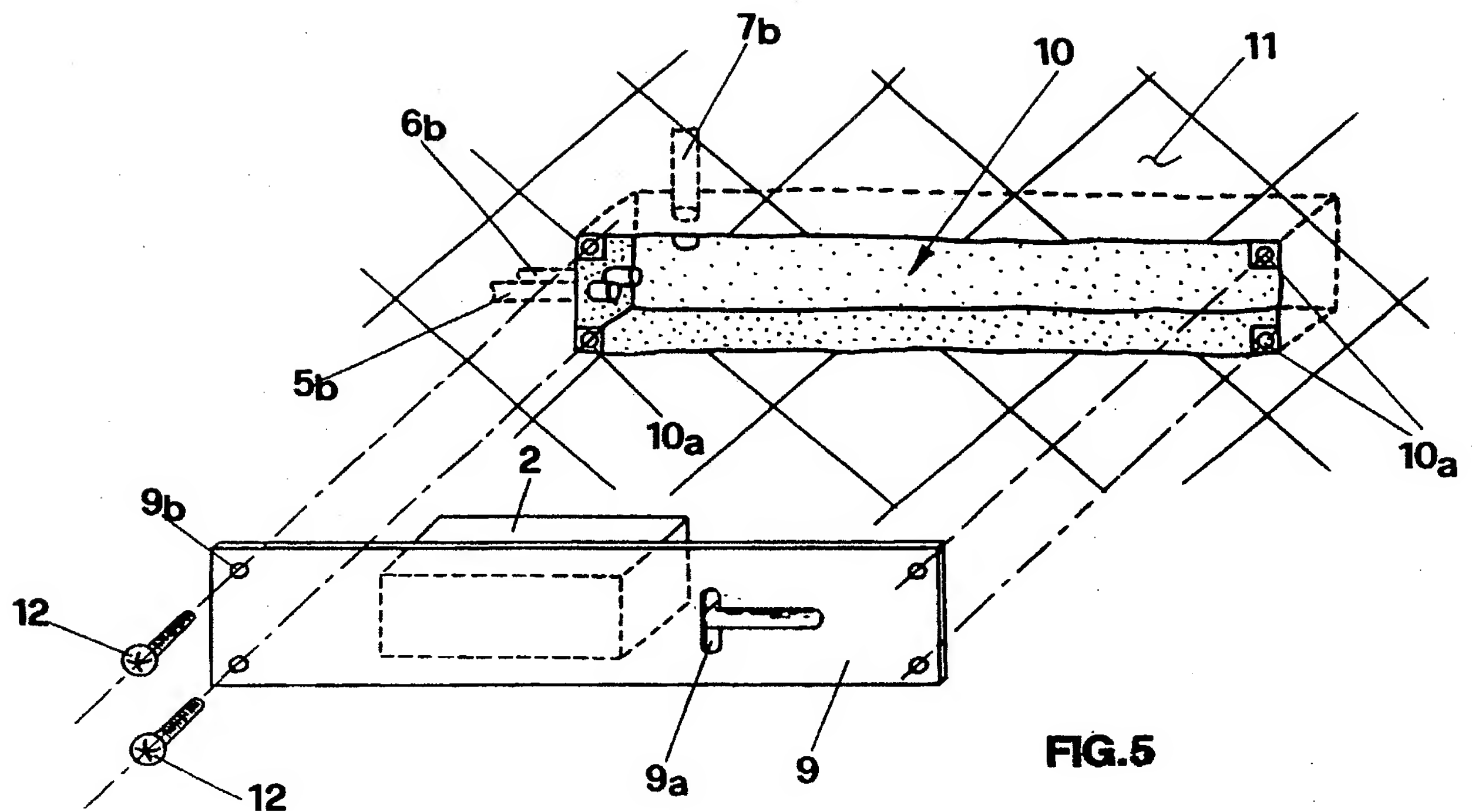


**FIG. 3**

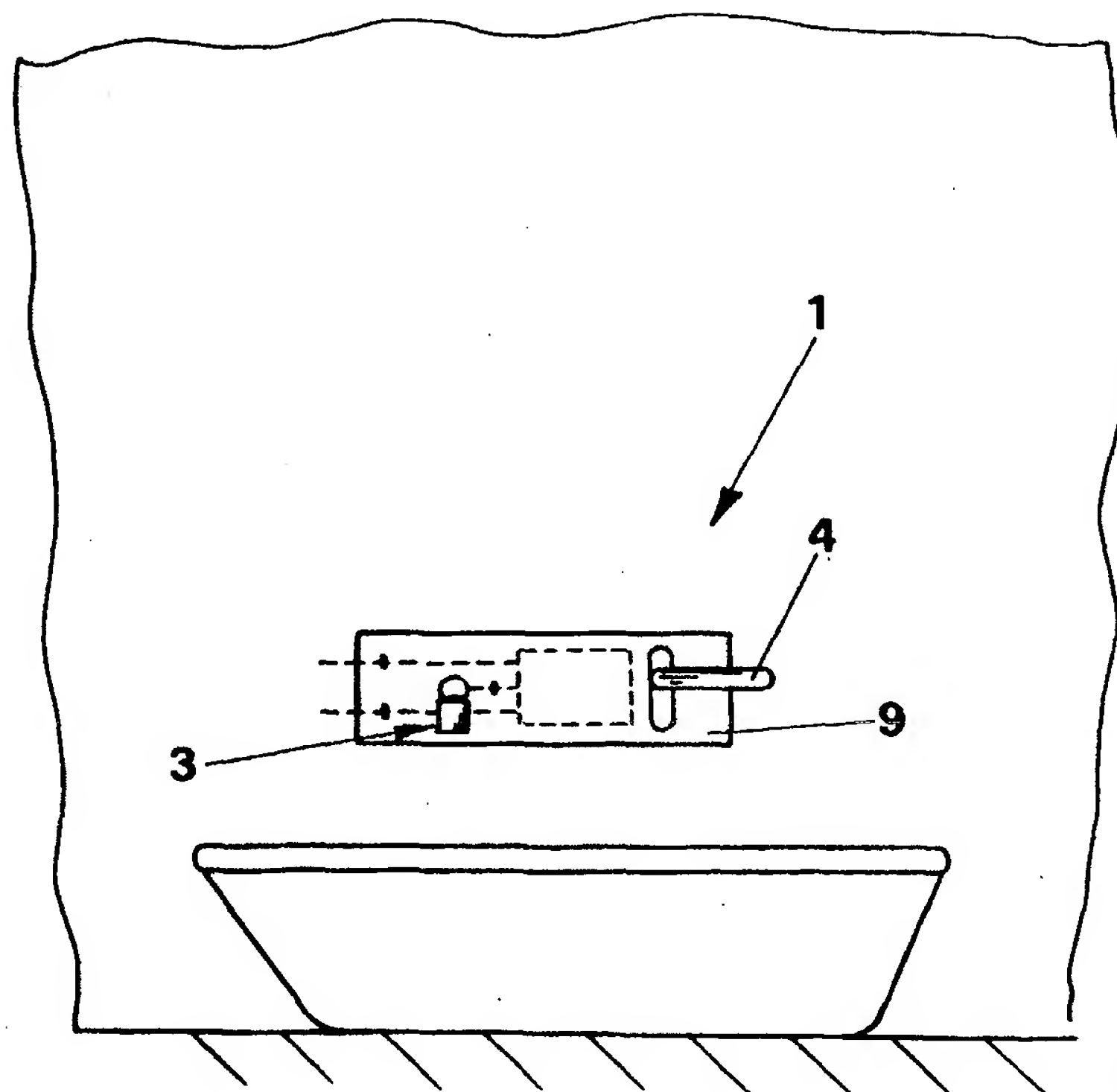
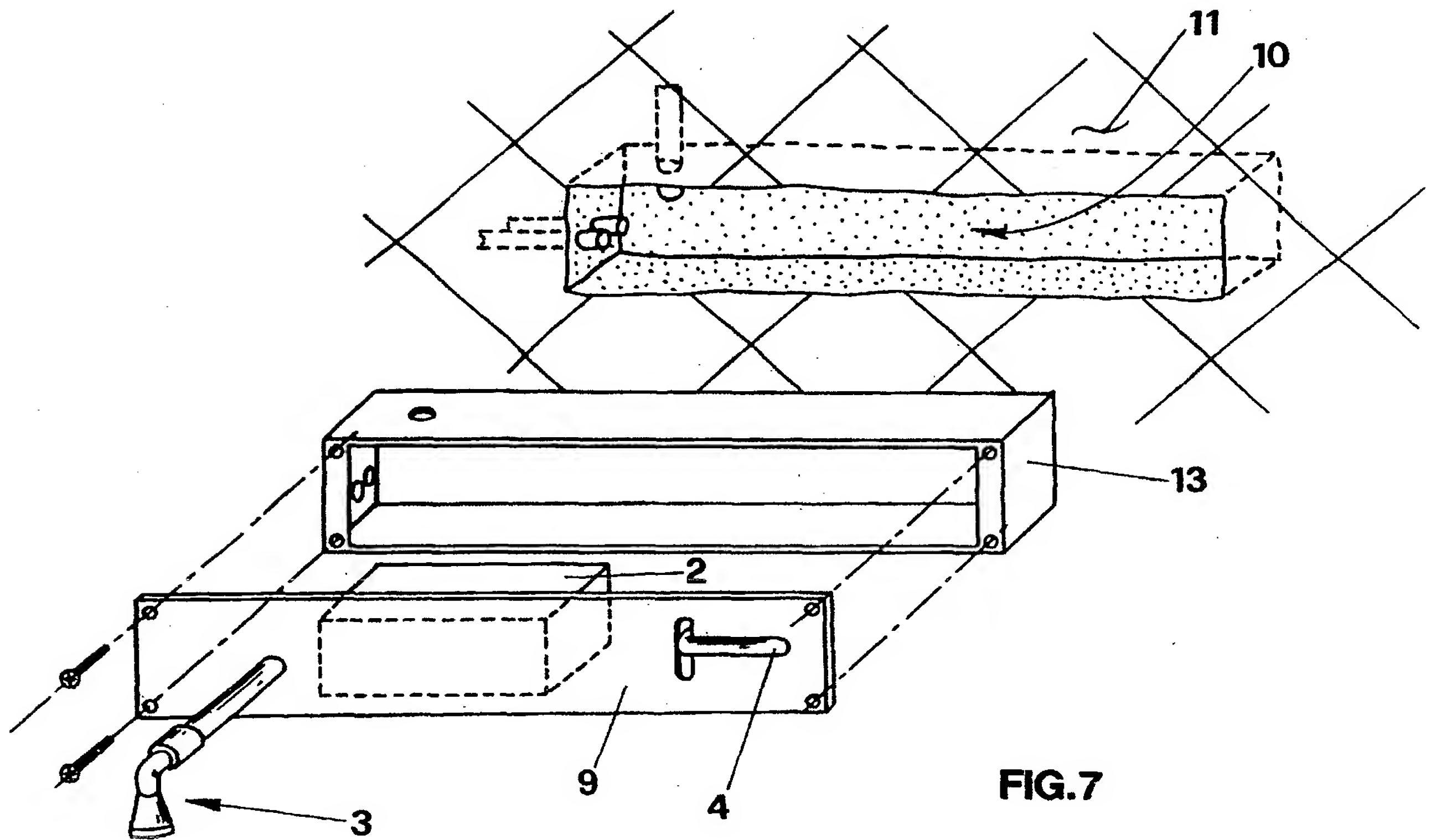


**FIG. 4**

**2/3**



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## INTERNATIONAL SEARCH REPORT

Internat Application No

PCT/EP 03/01167

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 E03C1/02 E03C1/04

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 E03C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 200 09 957 U (KIRCHGEORG VOLKER) 24 August 2000 (2000-08-24) page 3, line 10 -page 6, line 3; figure 5 ---	1-6
X	US 4 654 900 A (MCGHEE CHARLES M) 7 April 1987 (1987-04-07) column 1, line 8 - line 22; figures 1,4,8,10,12 column 2, line 48 -column 3, line 25 column 4, line 10 - line 14 column 4, line 50 -column 5, line 39 ---	1-6
X	FR 2 702 264 A (RAF RUBINETTERIE) 9 September 1994 (1994-09-09) figures 1,2,4 --- -/--	1,3,4

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

10 June 2003

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17/06/2003

Name and mailing address of the ISA

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2 314 950 A (POPE E. A.) 30 March 1943 (1943-03-30) the whole document -----	1,3,6

Form PCT/ISA/210 (continuation of second sheet) (July 1992)



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